January 26, 1864.

E. W. H. Holdsworth, Esq., F.Z.S., in the Chair.

Mr. Monteiro exhibited a living Pigeon (*Columba arquatrix*), obtained by his son Mr. J. J. Monteiro in Benguela.

An extract was read of a letter from Dr. Harry Anthony to Mr. Louis Fraser, dated Brass River, Bight of Biafra, 3rd Dec. 1863, referring (as follows) to what was supposed to be a species of *Clarias*:—

"I intend to try and send you by my next ship some of the 'Black Fish' out of the bush, called by the natives Egalegala; they are perfectly black, and are very fine eating. They are so fat they will fry without butter, taste something like eels; they are in shape something like '*Cat-fish*,' with filaments from the lower jaw; they live amongst the mud in the mangrove bush. It would be grand to acclimatize them; they are such fine eating. They would drive eels out of the market.

The following papers were read:—

1. On the Optic Lobes of the Brain of the Echidna. By W. H. Flower, F.R.C.S., F.Z.S., Conservator of the Museum of the Royal College of Surgeons.

It is commonly stated in works on comparative anatomy, that while the optic lobes of the Mammalia generally are "*corpora quadrigemina*," in the Monotremata they are "*corpora bigemina*;" and herein a transitional character towards the inferior vertebrates has been perceived.

Professor Owen's description of these parts, in the article "Monotremata" in the 'Cyclopædia of Anatomy and Physiology' (the standard original authority upon the anatomy of this group of animals), runs thus:—In the *Ornithorhynchus* "the posterior bigeminal body is much smaller than the anterior, and the transverse depression which divides them is very feebly marked: the longitudinal groove is equally feeble on the 'nates,' and is altogether absent in the 'testes,' which thus form a single small tubercle. It is in the condition of these parts, recognized, but too briefly noticed, by Meckel, that the brain of the *Ornithorhynchus* deviates most essentially from the Marsupialia, and offers the most direct step in the descent to the Oviparous type." Of the *Echidna* he says, "The optic thalami and nates appear as one convex body, slightly contracted laterally, and divided from each other by a sigmoid linear fissure: the testes are only half the breadth of the nates, and the median longitudinal line of division, which is very faint in the larger bodies, is not visible in the small and posterior tubercle. The *Echidna* corresponds in this characteristic modification with the *Ornithorhynchus*."

It appears from this account, that, of the cross fissures which divide the four tubercles in the higher mammals, the longitudinal one is deficient in the Monotremes, and that the bodies are "anterior" and "posterior" in respect to each other. Now, as in the inferior Vertebrates, the two optic lobes are placed laterally, and in birds widely separated from each other in the middle line, a deficiency of the median longitudinal fissure is anything but a step to the oviparous type; and to apply "bigeminal" to the optic lobes of the Monotremata in the same sense in which it is applied to those of the oviparous Vertebrates leads to an erroneous conception of their condition.

I have lately had an opportunity of examining the brain of an *Echidna* (*E. hystrix*) which died in the Gardens of the Zoological Society; and on exposing the optic lobes, found that they differed considerably in appearance from the above-quoted description. They form together a mass transversely oblong, being ·35 inch in breadth and ·25 inch in length, placed between the optic thalami in front and the superior peduncles of the cerebellum behind. The small pineal body lies in a hollow in the middle line in front, and on each side of this the groove of separation between their anterior border and the posterior edge of the optic thalamus is distinct enough, so that there is no confluence of the 'nates' with the optic thalamus. On their posterior contour there is a fairly deep notch in the middle line, and the longitudinal fissure is indicated by a shallow groove along the entire upper surface. The projecting anterior and posterior tubercles on each side are also distinct, being separated from each other by a curved depression. The former is round, the latter transversely elongated, or rather crescentic, with the concavity turned

Fig. 1.

Fig. 2.

forwards. Viewed laterally, the posterior eminence is seen to be somewhat less elevated than the anterior. Compared with the size of the cerebral hemispheres these bodies are small, much less deve-

loped, for instance, than in a Rodent of corresponding dimensions. Another important point to notice is, that the ventricles of the optic lobes, the persistence of which is so characteristic of the oviparous Vertebrates, are obliterated in the *Echidna*.

As is well known, there is considerable variation in the form and relative size of the four eminences on the surface of the optic lobes, and of the distinctness with which they are marked off from one another, in different mammals. In the Sloth, and more especially the Wombat, they are scarcely, if at all, more sharply defined than in the *Echidna*, which therefore, in this respect, presents no trenchant deviation from the ordinary Mammalian type.

EXPLANATION OF THE WOODCUT.

Middle portion of the brain of the *Echidna* (*E. hystrix*), twice the natural size.

Fig. 1. Seen from above. The cerebellum turned back to show its superior peduncles.

Fig. 2. Side view.

a. Optic thalamus.
b. Peduncle of the pineal body.
c. Pineal body.
d. Anterior eminence of the optic lobe (*natis*).
e. Posterior eminence of the optic lobe (*testis*).
f. Superior peduncle of the cerebellum (*processus a cerebello ad testes*).
g. Cerebellum.
h. Optic track.
i. Fifth nerve.

2. Description of Aspidiotes melanocephalus, a New Snake from Port Denison, N.E. Australia. By Gerard Krefft, Acting Curator and Secretary, Australian Museum, Sydney.

Fam. Boidæ.

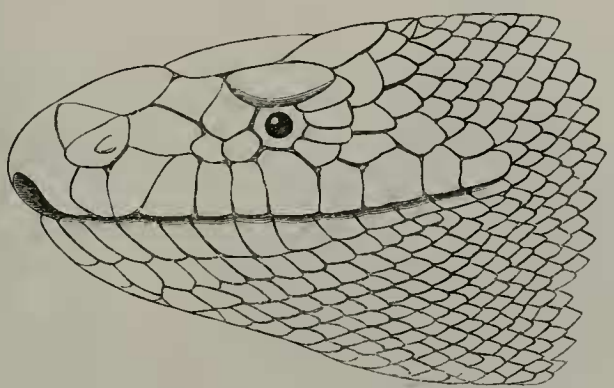
Aspidiotes, nov. gen.

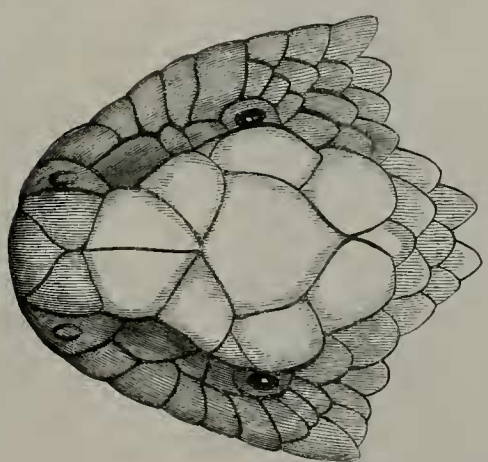
Crown covered with broad shields reaching behind the eyes; the remaining part of the head scaly; labial shields without pits, the front ones high and narrow, the hinder shields lower and broad. Nostrils lateral, in the middle of a plate, two loreals, two anterior and four posterior oculars; superciliaries broad, rather prominent above the eye; nasal shield very large, much produced backwards, and deeply grooved on its lower edge. Scales smooth, in fifty-two series on the middle of the body; ventral plates rather narrow; subcaudals entire, except the last ten or twelve, which are divided. Tail conical, prehensile, ending in a blunt point. Head rather high, of moderate size; teeth not very large (smaller than in *Morelia*). Body thick and compressed.

Aspidiotes melanocephalus.

Scales in 52 series on the middle of the body. Ventral shields narrow, 330. Anal entire. Subcaudals $51\frac{13}{13}$.

Head rather high ; body thick and compressed ; tail conical, tapering, prehensile, ending in a blunt point ; anal spurs small ; ten upper labials, the sixth coming into the orbit ; two anterior and four posterior ocular shields ; two loreals, the second nearest to the eye very small ; one nasal, pierced by the nostril ; eye moderate, pupil elliptical, erect. Three pairs of frontal shields, the middle pair longest ; vertical broad, the largest shield of the head, with an obtuse angle in front and an acute one behind, sides rounded ; superciliaries





large, prominent above the eyes ; occipitals distinct, but smaller than the vertical, forked and rounded behind ; the first pair of frontals small, triangular ; the second pair five-sided, nearly as large again as the first pair ; the third smaller than the second and larger than the first, quadrangular. Of the fourteen lower labial shields, the first seven are narrow and elongate, the rest broad ; no groove upon the labials. The nasal shield is very broad, with a deep pit, shaped like a bean, and much produced backwards. Head moderate ; body thick, compressed ; anal spurs small. Colour light brown, with a series of darker rings, which become indistinct near the sides ; below

yellowish-white here and there, with a few dark blotches; head and neck jet-black above and below. Total length 7′ 10″.

Hab. Port Denison.

3. Description of a New Species of Mormyrus. By Dr. A. Günther.

(Plate II.)

Only a short time ago I described* a peculiar species of *Mormyrus*, *M. petersii*, distinguished by a very long mandibulary flap. I have the pleasure to lay to-day before the Society another species with the same structure of the fins, and with a similar prolongation of the lower jaw. It comes, like *M. petersii*, from West Africa. The peculiar form of the snout has suggested the specific name of

Mormyrus tamandua. (Pl. II. fig. 1.)

D. 28. A. 31. V. 6. L. lat. 80. Body compressed, rather elongate—its greatest height, between the origin of the dorsal and anal fins, being two-ninths of the total length (without caudal); the length of the head is one-fourth of the same. The snout is much prolonged, tubiform, slightly tapering, and curved downwards, the distance between the eye and the end of the mandibulary flap being twice that between the eye and the gill-opening. The mouth is very small, at the extremity of the snout, with the jaws equal, and armed with two pairs of feeble conical teeth above and below. The mandibulary flap is as long as the eye. The eye is covered with the skin, but appears through from below it. The pectoral is nearly twice as long as the ventral, and extends beyond its base. The dorsal and anal fins are opposite each other, and placed on the caudal portion of the body, the origin of the former being in the middle between the occiput and the root of the caudal. The scales on the trunk are rather small and irregularly arranged, but become gradually larger and more regular posteriorly. Coloration uniform.

The single specimen obtained is 10 inches long.

We add, for comparison, the diagnosis of the other species mentioned above: —

Mormyrus petersii. (Pl. II. fig. 2.)

D. 27. A. 34. L. lat. 66. The mandible is prolonged into a long, conical fleshy appendage, which is nearly half as long as the head. Dark brown, with two lighter cross bands.

Hab. Old Calabar.

* Wiegm. Arch. 1862, p. 64.

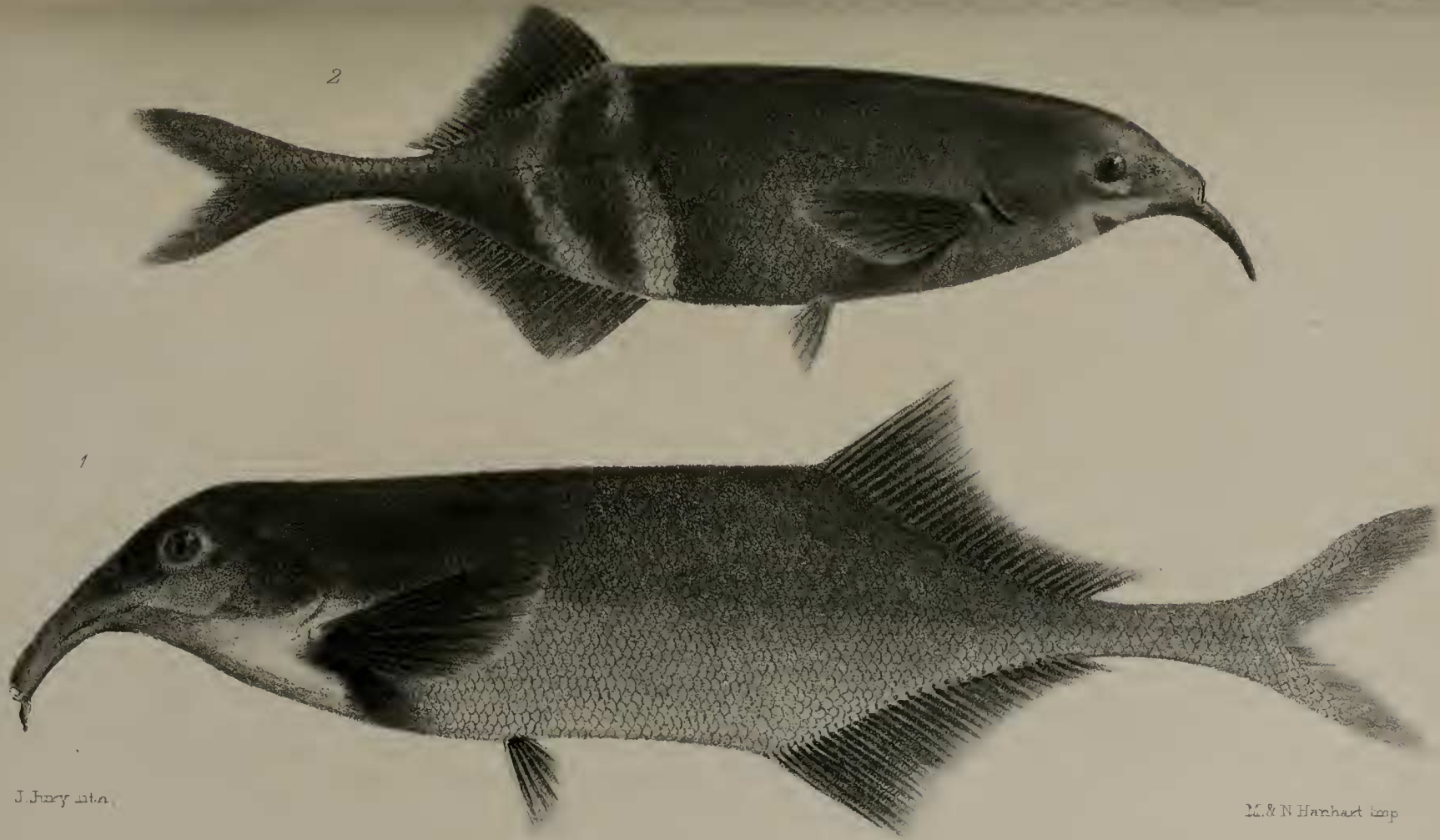
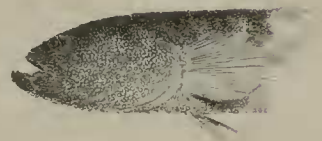
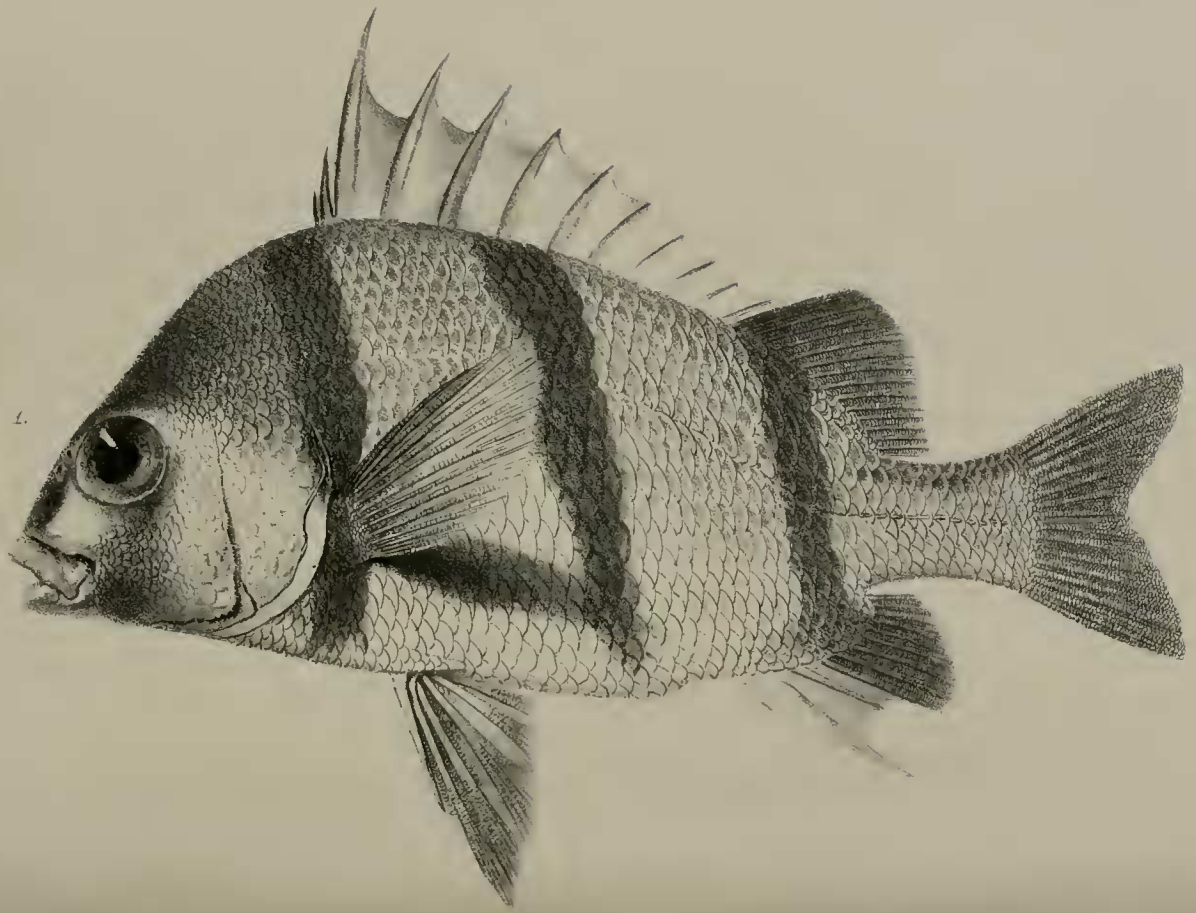


Fig 1 MORMYRUS TAMANDUA Fig 2 MORMYRUS PETERSII



2ª

2



1.

J. Jury. lith.

M & N Hanhart, Imp.

Fig 1. DIPRISTIDOMA DUVII

Fig 2, 2ª MICRODESMUS DIPUS

2

2 a

1

J. Jury lith

M. & N. Hanhart lith

Fig. 2. HEROS LABIATUS. Fig. 2 a. ELEOTRIS SEMINUDUS.

4. On some New Species of Central-American Fishes. By Dr. A. Günther.

(Plates III. & IV.)

Our Corresponding Member Capt. J. M. Dow having sent to this Society a second collection of Central American Fishes, a complete series of the species contained therein has been deposited by our Secretary in the British Museum. The following is a list of those which I have examined, a few others having been omitted, as they belong to families in the revision of which I am engaged at present or shall be in a very short time:—

I. *Species collected on the Pacific Coast of Panama.*

1. Serranus sellicauda, Gill, sp.

2. Rhypticus maculatus, Holbr.

3. Mesoprion novem-fasciatus, Gill, sp. Very closely allied to *M. griseus*.

4. Mesoprion, n. sp. There are two young specimens of an apparently undescribed form in the collection; but the description and determination are better deferred until more examples have been obtained.

5. Pristipoma melanopterum, C. & V.

6. Pristipoma dovii, n. sp. (Pl. III. fig. 1.)

D. $\frac{12}{16}$. A. $\frac{3}{9}$. L. lat. 48. L. transv. 8/15. The height of the body is one-half of the total length (without caudal); the length of the head one-third. Snout obtuse, not much longer than the eye; cleft of the mouth small, the maxillary extending to the vertical from the anterior margin of the orbit. Lips thick; a pair of pores on the symphysis of the lower jaw, a central groove behind it. Snout naked, the remainder of the head being scaly. The width of the interorbital space is much less than that of the orbit. Dorsal and anal spines exceedingly strong; the third of the dorsal fin is the longest, and nearly two-thirds as long as the head. The second anal spine is much longer than the third, and a little shorter (but stronger) than the third of the dorsal fin. Each ray of the soft fins is accompanied by a series of minute scales, but only on the caudal fin are these scales dense enough to cover the rays. Caudal fin slightly emarginate. Silvery, with four black cross bands: the first runs from the occiput through the eye to behind the angle of the mouth; the second from before the dorsal fin to below the base of the pectoral; the third from the base of the sixth, seventh, and eighth dorsal spines to the vent; the fourth descends from the origin of the soft dorsal to that of the soft anal. Fins blackish.

Only one specimen, $8\frac{1}{2}$ inches long, is in the collection.

7. Polynemus approximans (Lay & Bennett?).

D. $7\frac{1}{13}$. A. $\frac{3}{15}$. L. lat. 60.

8. Caranx, n. sp. There is a young specimen in the collection which appears to belong to an undescribed species closely allied to *C. carangus* and *C. hippos*.

9. Caranx leucurus, n. sp.

D. $8|\frac{1}{28}$. A. $2|\frac{1}{24-26}$. Very closely allied to *C. bicolor*. The first dorsal fin is composed of short, stoutish spines, the fourth of which is the longest, but scarcely longer than the eye. The soft dorsal and anal are rather elevated; the caudal is emarginate, and has the lobes rounded. Teeth very small, forming a single series in both jaws; palate smooth. The height of the body is one-half of the total length (without caudal), the length of the head one-third. Snout rather obtuse, the jaws being equal in front when the mouth is closed; the maxillary extends to below the anterior margin of the orbit. The lateral line makes anteriorly a subsemicircular curve, the width of which is contained from $1\frac{2}{3}$ to $1\frac{4}{5}$ times in the length of the straight portion; it becomes straight behind the vertical from the origin of the second dorsal, and is armed with about fifty small and low shields, only a few of which terminate in a depressed spine. The pectoral fin extends to the anal spines. Brownish grey, body with six dark-brown vertical bands: the first crosses the body behind the base of the pectoral, and the fourth descends from the middle of the soft dorsal fin. Operculum with a large black spot. Dorsal, anal, and ventral black; pectoral and caudal whitish.

Only two young specimens are in the collection, the larger being 3 inches long.

10. ? Caranx dorsalis, Gill, sp.

11. Gobius soporator, Cuv. & Val.

12. Eleotris seminudus, n. sp. (Pl. IV. figs. 2, 2 *a*.)

D. 7|11. A. 9. The head and the trunk are naked; the tail is covered with small scales; head depressed, broader than high, flat above, its length being two-sevenths of the total. Snout rather obtuse, longer than the eye, with the lower jaw somewhat prominent; the cleft of the mouth extends to below the anterior margin of the orbit. Teeth in the upper jaw in a narrow band; the lower has four somewhat larger and recurved teeth in front, the others appear to form a single series; palate toothless. None of the fin-rays are prolonged; the pectoral does not quite extend to the origin of the second dorsal; ventral much shorter than pectoral, its inner ray is the longest, the others gradually decreasing in length outwards; caudal fin rounded. Brown, with numerous well-defined white cross stripes on the head as well as on the body; vertical fins black.

Although there is only a single example, 20 lines long, in the collection, the characters of this species are so well marked that I do not hesitate to describe it.

13. Salarias atlanticus, Cuv. & Val.

14. Clinus delalandii, Cuv. & Val.

15. Clinus macrocephalus, Gthr.

16. Cremnobates monophthalmus, Gthr.

17. Atherinichthys pachylepis, n. sp.

D. $4|\frac{1}{6-8}$. A. $\frac{1}{20-21}$. L. lat. 41. L. transv. 7. The height of the body is nearly equal to the length of the head, and contained five times and a half or five times and a third in the total length (without caudal). The snout is short, not longer than the diameter of the eye, and the cleft of the mouth does not extend backwards to below the anterior margin of the eye. The anterior dorsal is composed of short, feeble spines, and its origin is opposite to the fourth or fifth anal rays. The pectoral fin is much longer than the head. The silvery streak occupies the adjoining halves of the third and fourth series of scales.

Two specimens, 6 inches long, were in the collection.

18. Mugil brasiliensis, Agass.

19. Mugil proboscideus, Gthr.

20. Gobiesox rhodospilus, n. sp.

D. 6. A. 5. C. 8-9. P. 17. A vertical fold of the skin along the lower half of the base of the pectoral; the coracoid is scarcely below the level of the upper margin of the pectoral. The distance of the origin of the dorsal fin from the caudal is contained twice and two-thirds in its distance from the snout; the anal commences below the third dorsal ray. A very narrow band of short conical teeth in the upper jaw—one of the lateral teeth being somewhat larger than the others, recurved, canine-like. The lower jaw with a single series of teeth, the anterior being narrow incisors, whilst the outermost on each side is distinctly a canine tooth, corresponding to that in the upper jaw. Rose-coloured, with dark-rose transverse spots, each spot having an edge of deep-red dots.

Two specimens, 18 inches long, are in the collection.

21. Platyglossus dispilus, n. sp.

D. $\frac{9}{11}$. A. $\frac{2}{12}$. L. lat. 28. L. transv. 2/9. The height of the body equals the length of the head, and is contained four times and one-fourth in the total. Caudal fin rounded, with the lobes very slightly produced. Greenish olive, with a roundish black spot edged with silvery, on the lateral line, below the fifth and sixth dorsal spines; the side of the head with five or six pearl-coloured streaks, a part of which are continued on the body, forming a series of round spots. An oblong variegated blotch behind the pectoral fin: it is composed of three pearl-coloured stripes, enclosing two yellow bands, each of which has an undulated purple edge. No spot in the axil of the pectoral. A short oblique yellowish streak behind the base of

each soft dorsal ray; these streaks form a continuous band on the spinous portion. Anal fin with two or three whitish lines; caudal with several irregular reddish longitudinal bands, which are convergent behind.

Young specimens are much more plain-coloured; the black spot on the lateral line, however, is very distinct, and there is another at the root of the caudal.

Capt. Dow's collection contains a single young specimen; but Mr. Salvin has brought a second, apparently adult, it being $5\frac{1}{2}$ inches long.

22. Pseudojulis notospilus, n. sp.

D. $\frac{9}{11}$. A. $\frac{3}{12}$. L. lat. 25. L. transv. $\frac{2\frac{1}{2}}{8}$. The height of the body is rather less than the length of the head, and contained four times and a quarter in the total. Dorsal spines pungent; caudal fin slightly rounded. Brownish or yellowish olive; young specimens with a silvery band along each side of the trunk, above the pectoral fin. Back with four or five indistinct broad brown cross bars; a series of blotches on the dorsal fin corresponds to these cross bands, one of them, on the three first soft dorsal rays, being the largest and most distinct; it is of a deep black colour, and of an ovate form. The corners of the caudal fin are white; ventral whitish, with a broad blackish outer margin.

One adult specimen, 4 inches long, and several young ones are in the collection.

23. Julis lucasana, Gill.

24. Dinematichthys marginatus, Ayres.

25. Microdesmus dipus, n. g. et sp. Of this we have received only a single small example; and as it is not in a perfect state of preservation, we cannot decide whether it should be referred to the Blennoids or Gadoids, or whether it is the type of a distinct family. However, we may hope that Capt. Dow will succeed in obtaining more specimens.

Microdesmus.

Body much elongate, eel-like, covered with rudimentary scales; head rather short, with obtuse snout, narrow cleft of the mouth, and prominent lower jaw. Eyes minute. Teeth in both jaws minute; palate toothless. The gill-opening is reduced to a small slit in front of the pectoral fin. Vertical fins united by a membrane, but the caudal can be easily distinguished from the two other fins. Dorsal fin very long, composed of flexible, undivided rays, like the anal. Pectorals short; ventrals thoracic, each reduced to a single ray. Vent in the middle of the total length.

Microdesmus dipus. (Pl. III. fig. 2.)

D. 55. A. 34. C. 16. P. 12. V. 1. The depth of the body

is about one-eighteenth of the total length; the length of the head one-eleventh. The head is rather compressed, the snout short, the mouth very narrow, and the lower jaw very prominent. The minute eye is lateral and in the anterior third of the length of the head. The dorsal fin commences at a distance from the occiput which is somewhat less than the length of the head; it is nearly even, and the rays are very distinct, the interradial membrane being thin and transparent. The anal fin commences immediately behind the vent. The caudal rays are much more slender and more closely set than those of the dorsal and anal; the caudal fin is rounded, two-thirds of the length of the head. Pectorals as long as the ventrals, and half as long as the head; the latter fins are close together, and inserted a little behind the root of the pectoral. Upper parts uniform brownish olive.

The single specimen is $4\frac{1}{2}$ inches long.

26. Anableps dovii, Gill.

II. *Species collected at Colon.*

1. Pristipoma melanopterum, Cuv. & Val.

2. Pomacanthus paru, Gthr.

3. Sphyræna picuda, Bl. Schn.

III. *Species from the Lake of Managua, Nicaragua.*

1. Heros labiatus, n. sp. (Pl. IV. fig. 1.)

D. $\frac{17}{11}$. A. $\frac{8}{8}$. L. lat. 32. L. transv. 6/13. The anterior portions of the upper and lower lips are much enlarged, each forming a moveable subtriangular flap. The height of the body is somewhat more than the length of the head, and two-fifths of the total. The mouth is very protractile; the eye occupies the middle of the length of the head. Scales on the cheek in four series. Base of the dorsal almost scaleless. Uniform red, or sometimes red irregularly marbled with black.

The largest specimen is 7 inches long.

5. Notes on Seals (Phocidæ), including the Description of a New Seal (Halicyon richardii) from the West Coast of North America. By Dr. J. E. Gray, F.R.S., etc.

Mr. Charles B. Wood, the Surgeon of H.M.S. 'Hecate,' has very kindly sent to the British Museum, along with other interesting specimens from the north-western part of North America, the skeleton of a Seal from Fraser's River, and the skull of a Seal obtained on the west coast of Vancouver's Island.

The skull was procured from the natives, who had the animal

towed along the side of their canoe. They refused to part with the entire animal, but were at length induced to sell the head.

The examination of the skulls shows that the two Seals evidently belong to the same species, the specimen from Fraser's River being adult, and the other not quite so old. Mr. Wood observes that "the younger Seal was captured among the islands in Queen Charlotte's Sound, at the north end of Vancouver; has a fur of a dark brown, almost black-colour; and is unlike that from the Fraser's River, which is lighter and less timid, being often seen seated on a log floating down with the current."

The skull of this Seal differs so greatly from those of any of the Seals on the eastern side of the Arctic Ocean, that I am induced to propose for it a new subdivision, which may be thus named and characterized:—

Halicyon.

The palate of the skull arched out behind. Cutting-teeth $\frac{6}{4}$. Grinders 3 or 5, lobed, compressed. The lower jaw strong, bowed out on the sides, thick in front, and with a low crest on the inner side of the lower edge near the front; the ramus of the lower jaw erect, with a tubercular prominence beneath the notch at the angle.

Halicyon richardii, sp. nov.

Fur pale brown; when young, darker.

Hab. Fraser's River and Vancouver's Island.

I have dedicated this species, at the request of Mr. Wood, to Capt. Richard, the Hydrographer to the Admiralty, and Captain of H.M.S. 'Hecate' when these Seals were collected. I have the more pleasure in doing this, as the Museum has received many very interesting specimens collected during the voyage of the 'Hecate,' showing the interest which her Commander takes in the natural sciences, which I have no doubt will receive additional encouragement in the new position which he has won by his hydrographic and scientific qualifications.

The skull resembles that of *Callocephalus hispidus* and *Pagophilus grœnlandicus* in the dilatation of the front part of the lower edge of the lower jaw; but it agrees with *Callocephalus hispidus* most in the greater development of the face, and in the concave edge of the hinder part of the palate.

It differs from these skulls—

1. In the dilatation of the lower jaw not being extended so far back, only occupying the first two-fifths of the length of the jaw; while in the other two species it occupies full half the length of that bone.

2. In the sides of the lower jaw being much wider apart, and arched outwards, making the space between them much wider behind, agreeing in this respect with *Phoca barbata*.

3. In the front of the lower jaw being thick and swollen, and with only a slight ridge on the middle of the lower edge in front; and the jaws in this part being well separated from each other, not thin, concave inwardly, and with a well-developed inferior edge on the

inner sides, those of the two sides of the jaws being parallel and near together in the centre.

The angle at the hinder lower edge of the lower jaw is much more produced, and with a more prominent tubercle, than in either *Callocephalus hispidus* or *Pagophilus grœnlandicus*.

4. The hinder edge of the palate being concave forwards, and not straight and transverse as in *Pagophilus*, nor angularly cut out as in *Callocephalus*.

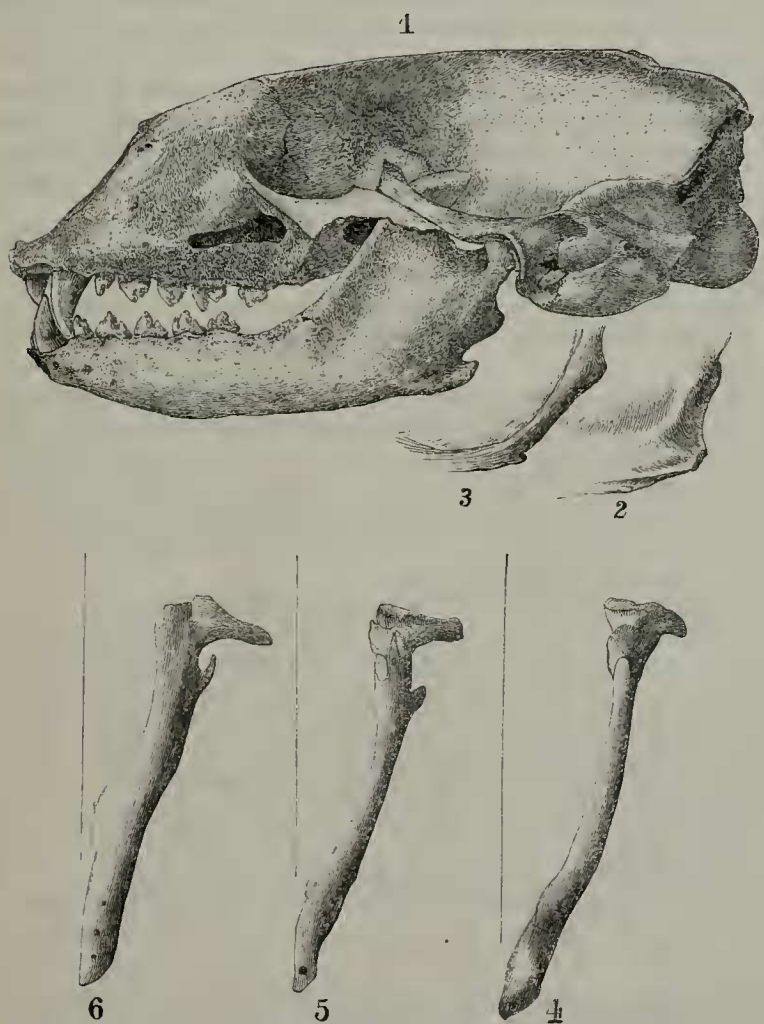


Fig. 1. Skull of *Halicyon richardii*.
2. End of lower jaw of *Phoca barbata*, to show the dilatations and inflexions of the lobe over the angle.
3. End of the lower jaw of *Pagomys fœtidus*. The end of the jaw of *Callocephalus vitulinus* is somewhat similar.
4. Lower edge of the lower jaw of *Halicyon richardii*.
5. Lower edge of the lower jaw of *Phoca barbata*.
6. Lower edge of the lower jaw of *Pagophilus grœnlandicus*. The jaw of *Pagomys fœtidus* is somewhat similar, but much smaller.

In the younger specimen the edge of the palate has a slight prominence in the middle of each side; but this is evidently an accidental deformity, as the prominences are not of the same size in the two sides. In the adult skull the two sides of the palate are evenly arched out.

The lower jaw most resembles that of the restricted genus *Phoca* (of which *P. barbata* is the type) in being solid and strong, and in the two sides being arched out, leaving a very wide oval space between them, the front part of the space being continued by a tubercle on the inner edge of the front of the jaw, a short distance from the symphysis.

In *Phoca* the tubercle on the inner side of the lower edge is short, rounded, blunt, and more or less rugose; in the new Seal, *Halicyon*, it is a short-edged, elongated ridge. In *Phoca* the teeth are small, erect, and far apart; and in *Halicyon* they are larger, closer together, and distinctly three or five lobed.

In *Halicyon* the hinder edge of the ramus of the lower jaw is simple, with a distinct notch between it and the tubercular angle of the jaw. In *Phoca* the hinder edge of the ramus is inflected, forming a large half-oblong lobe, convex in front, and concave behind. (fig. 2).

It is very interesting to observe that there is a representative genus on each side of the Arctic Pole; and this agrees with my previous experience—that each species of Seal has a limited, indeed I may say a very well-defined and very limited, geographical distribution. Though the species are very difficult to distinguish by their external characters, yet the skeleton, and especially the skull, affords well-marked and very definite characters.

M. Lepechin described a *Phoca oceanica* (Act. Petrop. 1777, 259. t. 6 & 7), which has been considered the same as *Pagophilus grœnlandicus*, as abundant on the ice around Nova Zembla. It would be curious to see the skull of a specimen from that locality, and thus discover which species extends itself so far north as those islands. *Phoca oceanica*, in its young and old state of fur, resembles *Pagophilus grœnlandicus*; but unfortunately we have only a very limited knowledge of the external appearance of this new Seal from Vancouver's Island.

The study of a large series of specimens of several species of Seals shows that the form of the lower jaw, though hitherto little attended to by zoologists, affords a very good character for the distinction of the species.

In *Pagophilus grœnlandicus* and *Halicyon richardii* the angle of the lower jaw is far back, and the hinder edge of the ramus ascends nearly perpendicularly, with a notch at the hinder end, as shown in fig. 6. In *Phoca barbata* the form of the lower jaw and ramus is nearly similar; but instead of a notch near the angle, the inner edge is produced inwards into a rounded lobe (fig. 2, and see Cat. Seals B.M. p. 27, f. 9).

In *Callocephalus vitulinus* and *C.* (*Pagomys*) *fœtidus*, on the contrary, the angle of the lower jaw is more towards the front, and the

hinder edge of the ramus ascends obliquely with the notch considerably in front of the condyle (see fig. 3).

M. Gaimard, in his 'Voyage to Iceland and Greenland,' Mammalia, plate 11, devotes a plate to the skull and teeth of the Seals of Iceland and Greenland; but he does not pay any attention to the form of the lower jaw, except incidentally, when representing the teeth of the lower jaw of his *P. annellata* (t. 11. f. 9). I may observe that this author names on his plates what we call *Phoca annellata P. hispida*, and what we call *P. grœnlandica P. annellata*.

Believing it to be desirable that the Seals, which are so difficult to distinguish by their external characters, should be divided into small sections or subgenera by organic characters, I propose to divide the tribe of *Phocina*, as defined in my Monograph (see Cat. Seals in the British Museum, p. 20), thus:—

1. Branches of lower jaw diverging; the lower edge of the lower jaw rounded, simple; palate angularly arched behind; angle of lower jaw blunt, sloping behind. CALLOCEPHALUS. *C. vitulinus.*

2. Branches of lower jaw diverging; lower edge of lower jaw dilated on the inner side.

   * Palate angularly notched behind; angle of lower jaw blunt, sloping behind. PAGOMYS. *P. fœtidus. P.? nummularis.*

   ** Palate truncated behind; angle of lower jaw acute, erect behind, with a notch above the basal tubercle. PAGOPHILUS. *P. grœnlandicus.*

3. Branches of lower jaw arched on the side and wide apart; lower edge produced on the inner side behind the symphysis; palate arched.

   * Tubercle on inner edge of front part of lower jaw elongate, sharp-edged; teeth moderate; angle of lower jaw simple, with a distinct notch above it. HALICYON. *H. richardii.*

   ** Tubercle on inner edge of front part of lower jaw blunt, rugulose; teeth small; angle of lower jaw with a rounded lobe on inner side above the basal tubercle. PHOCA. *P. barbata.*

PAGOMYS? NUMMULARIS.

The lower jaws short and broad; the grinders thick, with a broad thick central lobe, and nearly side by side (in the skulls of the young animals).

Phoca nummularis, Temm., Faun. Jap. Mamm. Mar. p. 3.

Hab. Japan (*Temm.*).

This species is only known from some skins and three fragments of skulls in the Leyden Museum.

My excellent friend Professor Schlegel, the energetic Curator of

the Leyden Museum, has most kindly sent to me for examination and comparison the fragments of skulls above referred to: they consist of the face-bone and the lower jaws of three specimens; the most perfect specimen has part of the orbit and the upper part of the brain-case attached to it. They are all from very young specimens, of nearly the same age; and, unfortunately, the most perfect one is without the hinder portion of the palate, so that I cannot make sure that it has the same form of the palatine margin that is found in *Pagomys*; but the part of the side of the palate that is present, when compared with the same part in *Pagomys*, leads one to think it most likely to be of the same form as in that genus.

The general form and size of the face, and the form of the teeth, are very similar to those of a skull of *Pagomys fœtidus* of the same age. It only differs from the latter in the lower jaw being rather shorter and broader, in the grinders being larger, thicker, and rather closer together, in the central lobe of the grinders being considerably larger, thicker, and stronger, and in all the lobes of the grinders being more acute. The lower margin of the lower jaw is dilated in front, just as in *Pagomys fœtidus*; but the jaws behind the dilatation diverge more from each other, leaving a wider space between them at the hinder part. The form of the hinder angle of the jaws is very similar in the two species. The orbit is rather smaller and more circular; for in *P. fœtidus* it is rather oblong, being rather longer than wide. The forehead appears, as far as one can judge by the fragments, to be flatter and broader, and the nose rather shorter.

The following measurements show the difference between the two species:—

	P. fœlidus. in. 12ths.	*P. nummularis.* in. 12ths.
Length of lower jaw to hinder notch ..	2 11	1 7
Length of lower jaw to end of dilatation.	1 5½	1 2½
Length of upper teeth-line	1 3½	1 2
Length of three grinders	0 2½	0 3
Width at outside of hinder notch	1 9	1 7
Length of orbit	1 8½	1 5

The *Phoca nummularis* of Japan has been considered to be identical with *Phoca largha* of Pallas, from the east shore of Kamschatka, the *Phoca chorissii* of Lesson, and the *Phoque tigre* of Kraschennenikow (which has been named *Phoca tigrina* by Lesson), on the strength of their coming from nearly the same district; but I am not aware that specimens of any of the latter species exist to verify the union and determine what are the species described under these names.

The British Museum has lately purchased the dead body of a Seal, which had been exhibited in London as the "Talking Fish." The proprietor, an Italian, at first said it was from the coast of South America, but afterwards admitted that it was from one of the ports on the north side of the Mediterranean; and on examination it proved to be the Monk Seal (*Phoca albiventer*), the type of the

genus *Monachus* of Fleming and *Pelagus* of F. Cuvier, a genus which was one of the desiderata in the Museum Collection.

The comparison of the skull of this animal with the skulls of the Seal from Madeira, which I described in the 'Annals and Magazine of Natural History' for 1854 under the name of *Heliophoca atlantica*, has shown that the latter animal is the same as the Mediterranean Seal.

The British Museum has since received from M. Verreaux a very good skeleton of a Seal from Algiers, under the name of *Phoca leporina*, which is evidently the same as the *Phoca albiventer* of Cuvier (Oss. Foss. v. t. 17).

The following synonyms will therefore have to be added to those which I have placed under *Monachus albiventer* in the Catalogue of Seals in the British Museum, p. 18:—

Heliophoca atlantica, Gray, Ann. & Mag. N. H. 1854; Arch. f. Nat. 1855, p. 40.

Phoca leporina, Verreaux, not of Lepechin.

Hab. North and south shores of the Mediterranean, île d'Oléron, and Madeira.

These facts are interesting as showing that the Seal which was formerly believed to be confined to the north shore of the Mediterranean is also found on the southern one and on the islands of the Atlantic.

Nilsson, in his excellent monograph on the genus, after having examined all the materials that he could find in the different museums, reduced the number of species of Seals to fourteen.

We have now in the British Museum, as by the following list will appear, twenty-four most distinct species, established upon the examination of the osteological as well as the external characters of the animals.

1. *Lobodon carcinophaga*, Gray, Cat. p. 10. Antarctic Ocean.
2. *Stenorhynchus leptonyx*, Gray, Cat. p. 13. Antarctic Ocean.
3. *Leptonyx weddellii*, Gray, Cat. p. 16. Antarctic Ocean.
4. *Monachus albiventer*, Gray, Cat. p. 18=*Heliophoca atlantica*, Gray. North and south shores of the Mediterranean; Madeira.
5. *Monachus? tropicalis*, Gray, Cat. p. 28. Jamaica.
6. *Ommatophoca rossii*, Gray, Cat. p. 19. Antarctic Ocean.
7. *Callocephalus vitulinus*, Gray, Cat. p. 21. North Seas.
8. *Pagomys fœtidus*, Gray, Cat. p. 23. North Seas.
9. *Halocyon richardii*, Gray, P. Z. S. 1864. Vancouver's Island.
10. *Pagophilus grœnlandicus*, Gray, Cat. p. 25. North Sea.
11. *Phoca barbata*, Gray, Cat. p. 27. North Sea.
12. *Halichœrus grypus*, Gray, Cat. p. 30. North Sea.
13. *Trichechus rosmarus*, Gray, Cat. p. 32. North Sea.
14. *Morunga elephantina*, Gray, Cat. p. 34. Antarctic Ocean.
15. *Cystophora cristata*, Gray, Cat. p. 36. North Sea.
16. ——? *antillarum*, Gray, Cat. p. 38. Jamaica.
17. *Arctocephalus monteriensis*, Gray, P. Z. S. 1859, p. 358, t. 72. California.

18. *Arctocephalus hookeri*, Gray, Cat. p. 45. Falkland Islands.
19. —— *lobatus*, Gray, Cat. p. 44. Australia.
20. —— *nigrescens*, Gray, P. Z. S. 1859, p. 109. Falkland Islands.
21. —— *gillespii*, Gray, P. Z. S. 1859, p. 110, t. 70. California.
22. —— *delalandii*, Gray, P. Z. S. 1859, p. 107, t. 69. Cape of Good Hope.
23. *Callorhinus ursinus*, Gray, P. Z. S. 1859, pp. 103, 359, t. 68. Behring's Straits.
24. *Otaria leonina*, Gray, Cat. p. 47; P. Z. S. 1859, p. 360. Southern Pacific Ocean.

Besides these species, I have very little doubt that the *Phoca caspica* of Nilsson, from the Caspian Sea, the *Leo marinus* of Steller, from Behring's Straits, and *Pagomys nummularis*, from Japan, are distinct. I am not aware that the *Leo marinus* of Steller exists in any museum; the specimen we received from the St. Petersburg Academy under that name is the *Callorhinus ursinus* of the 'Proceedings of the Zoological Society' for 1859.

6. Notice of a New Species of Goliathus. By G. R. Gray.

(Plate V.)

Dr. Kirk has, on his return from the Zambesi, added to our knowledge a species of the genus *Goliathus*, which he obtained as long ago as November 1858, when he picked it up among the hills of Kebrabassa, which is situated about forty miles beyond the Portuguese town of Tete. As it appears to be new, I have ventured to lay a description of it before the Society under the name of *Goliathus kirkianus*.

♂. Castaneous black, with the upper part of head, the seven narrow longitudinal lines on the thorax, the base, and outer edges of the elytra broadly margined, also with a series of narrow irregular transverse lines on their centres of a pearly white. The bifurcated horn in front of the head, all beneath the body, and legs deep castaneous; the four hind legs fringed inwardly with pale rufous hairs. Scutellum of a long-triangular form, castaneous black, with a short narrow longitudinal line in the centre of a pearly white.

Of the known species it approaches most nearly to the *Goliathus fornassinii*, from which, however, it differs in the form of the head and thorax: the former is longer, with the bifurcated horn in front shorter, while each fork of it is broader, with the apex of each broadly truncated; the latter is less rounded, with the sides subangulated in the centre, thus differing from the figure of the head of the male given in the 'Ann. Soc. Ent. de Fr.' iv. pl. 7. f. 1*a*.